***Very Preliminary***

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# *Tests of the JLab FADC250*

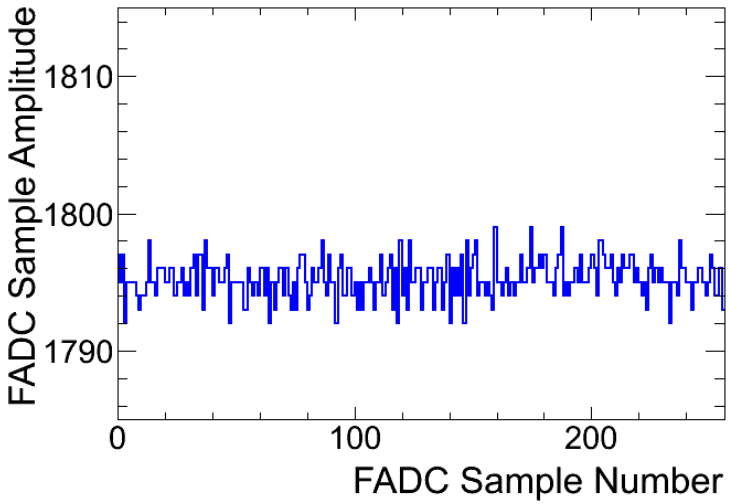
## *( 250 MHz, 12 bit)*

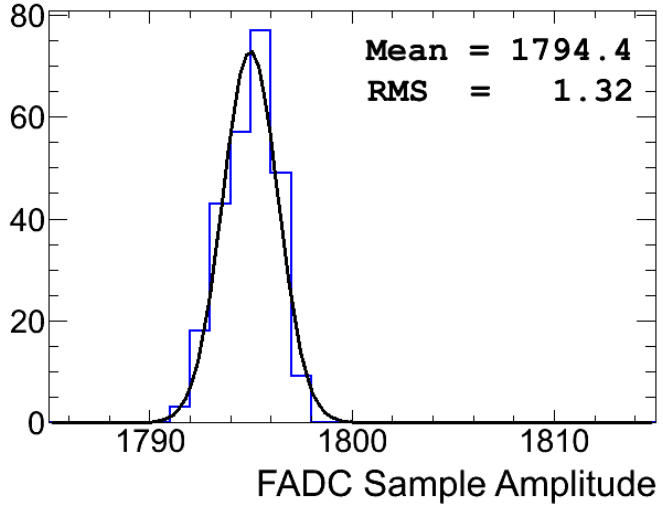
***Tests:***

- ***Internal noise during VME readout***
- ***AGS pCarbon***
  - ***baseline (depending on detector and intensity)***
  - ***carbon and prompt signals***
- ***Jet***
- ***RHIC pCarbon***

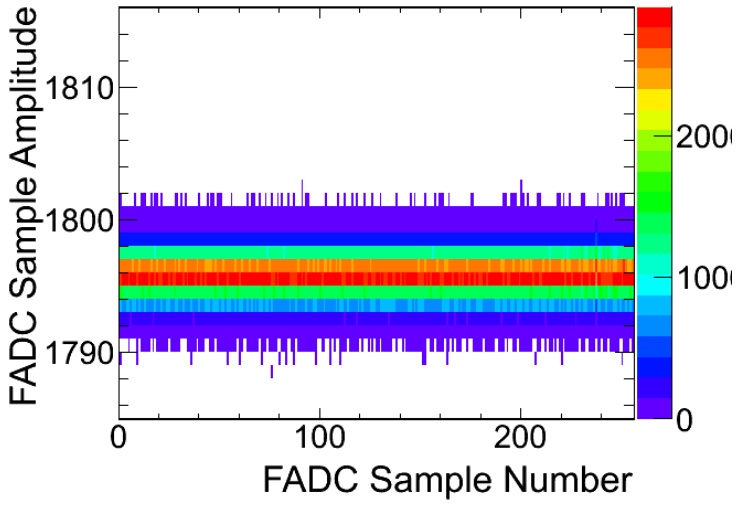
# Noise in the FADC (No Readout during data taking)

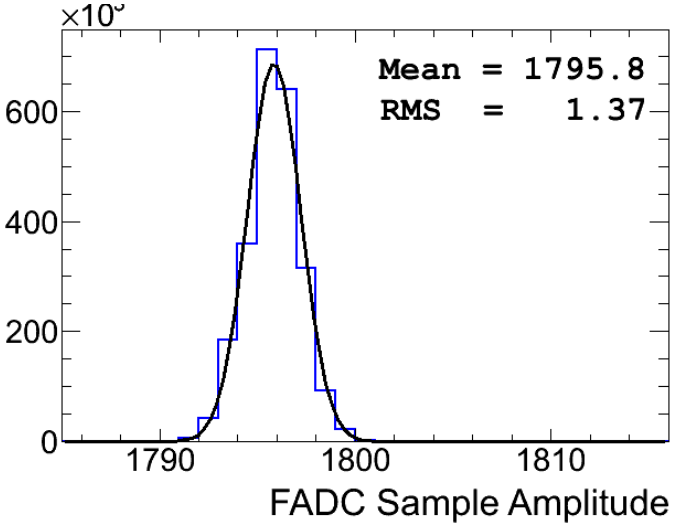
Single Event



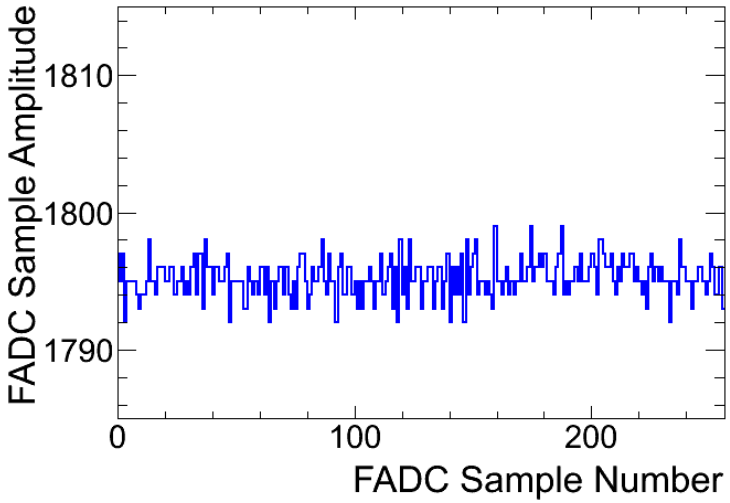

All Events

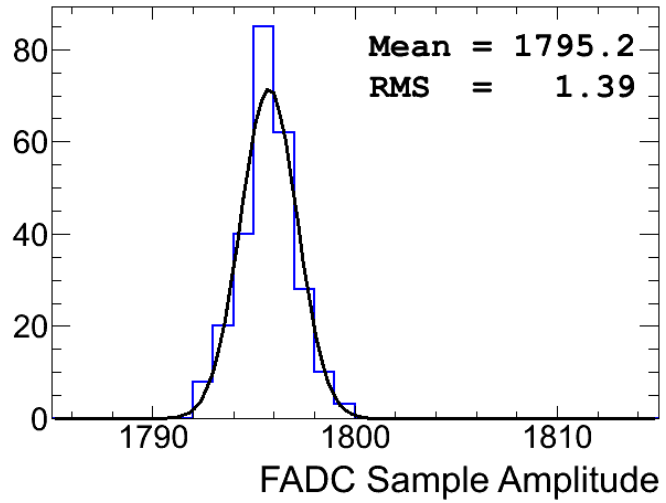


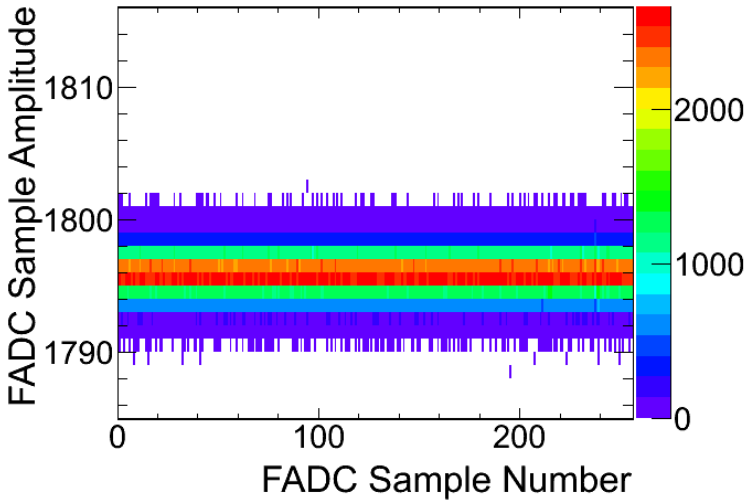
# Noise in the FADC (Readout during data taking)

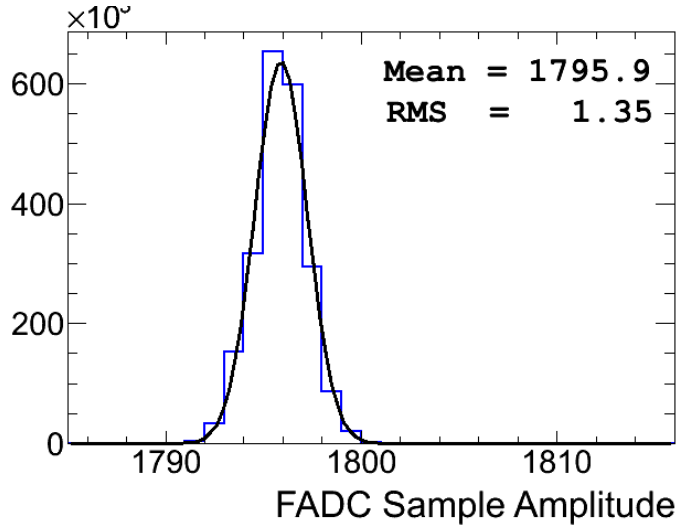
Single Event




All Events



# AGS Polarimeter

***Trigger:*** ***BunchZero*** ***(not synchronized with clocks)***

***Inputs:*** ***0. BunchZero***

***1. BunchZero + 2 ns***

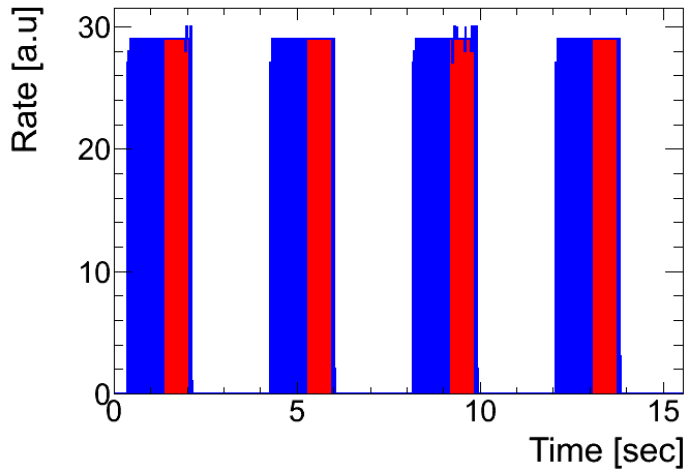
***2. WCM (software trigger)***

***3. Inner Detector Strip***

***4. Outer Detector Strip***

***Data:*** ***256 samples for every input***

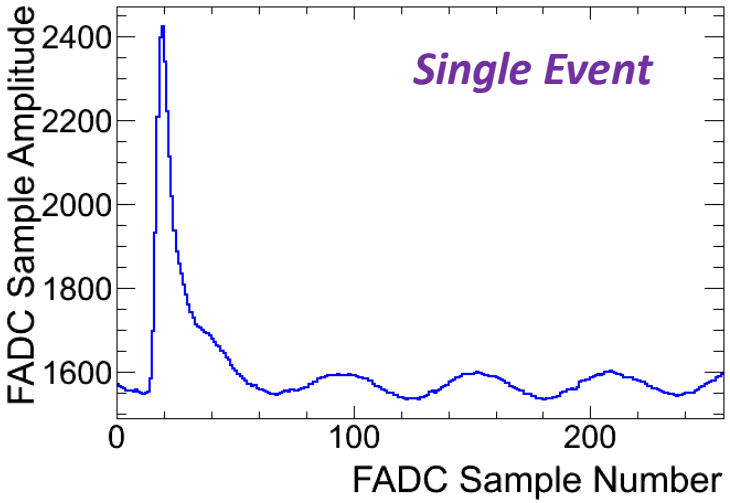
***Flattop selection (0.7 sec)***

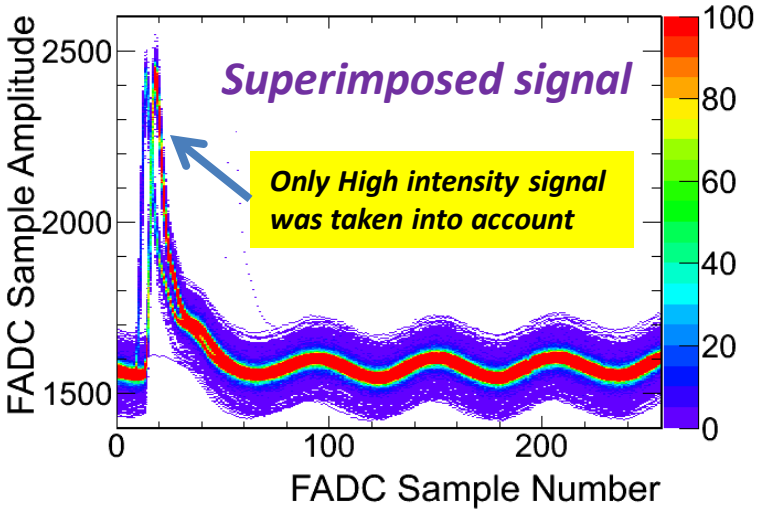


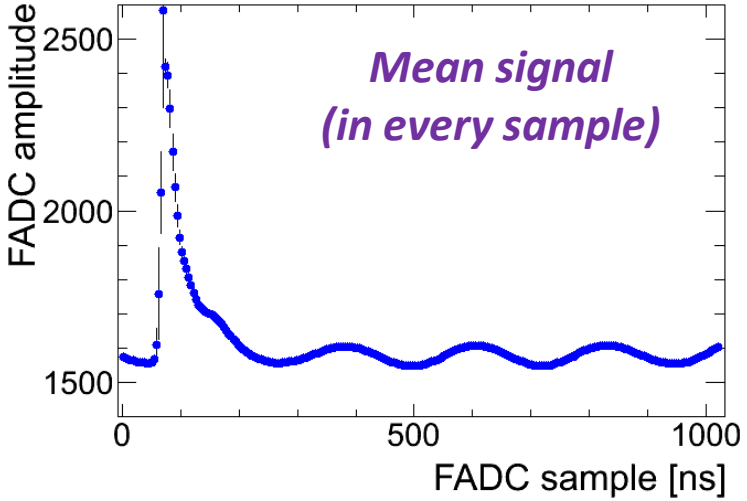

***Pairs of strips (0,84), (12,72), (24,60), (36,48) were tested with and without target at Beam intensity 1.5***

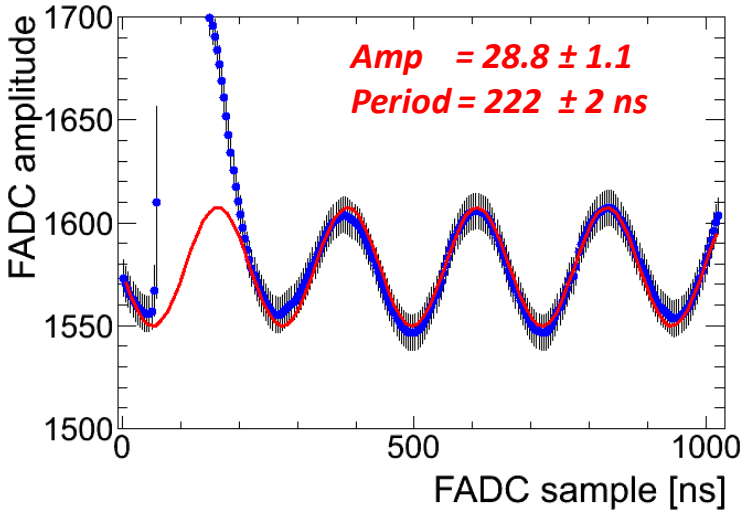
***Strips 0,84 were also tested with and without target at Beam Intensity 1.3, 0.7, 0.35***

# AGS: Wall Current Monitor Signal



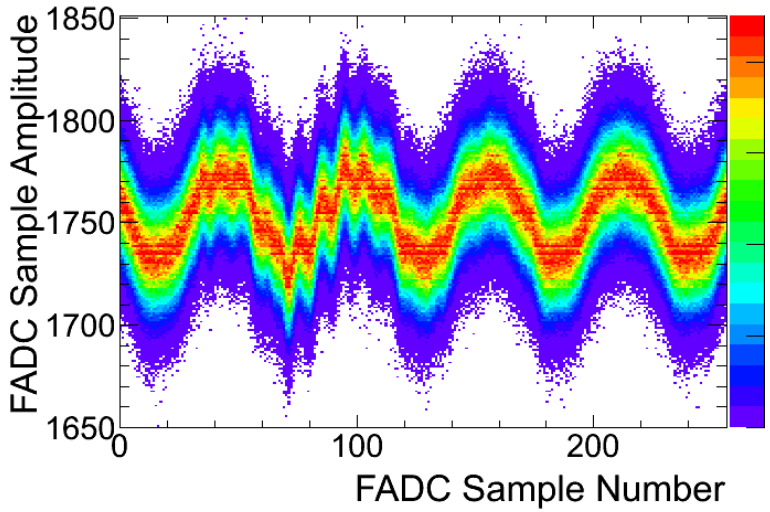



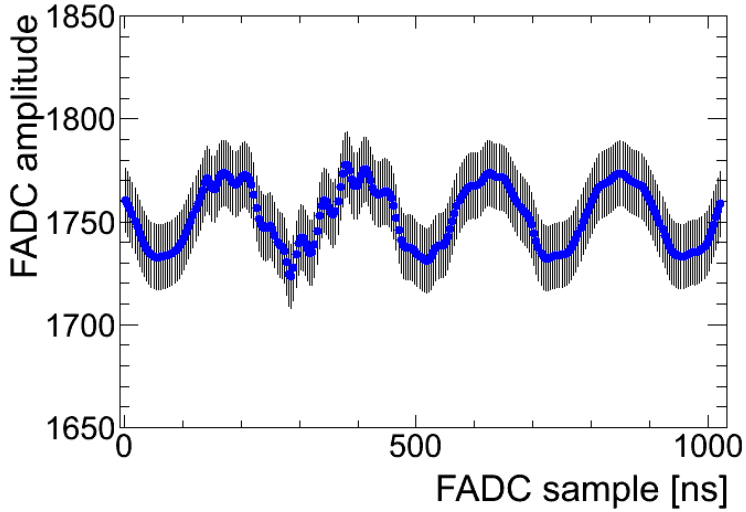



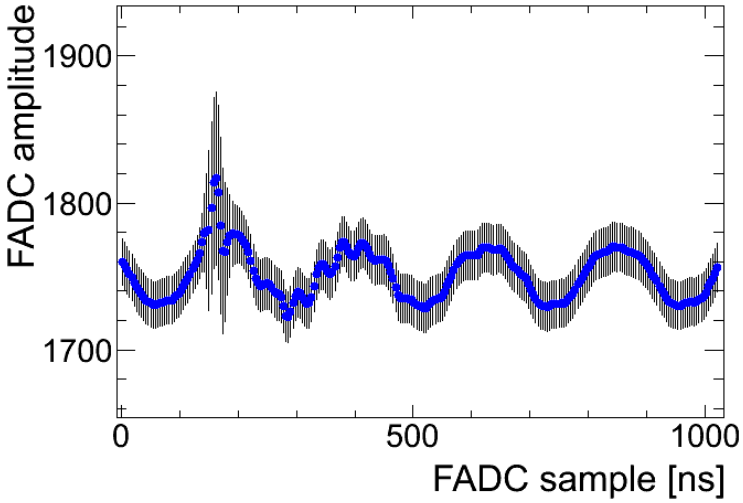
# AGS: Chan. 0 (Ham, Slow, Outer) Intensity 0.35

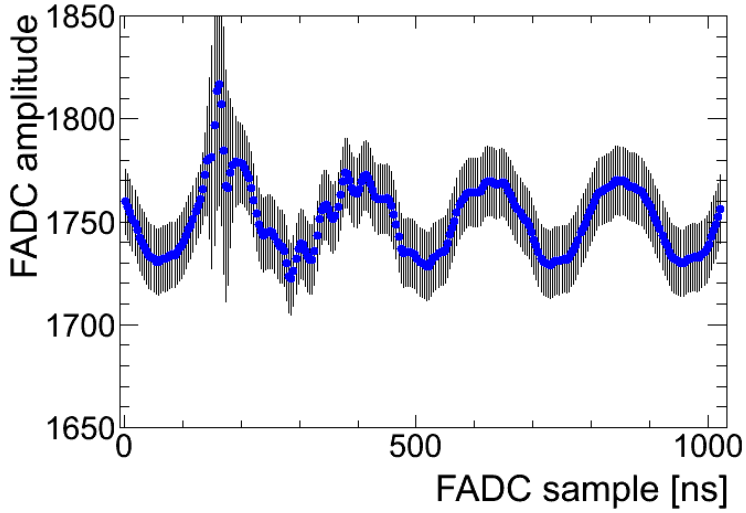
**No Target**



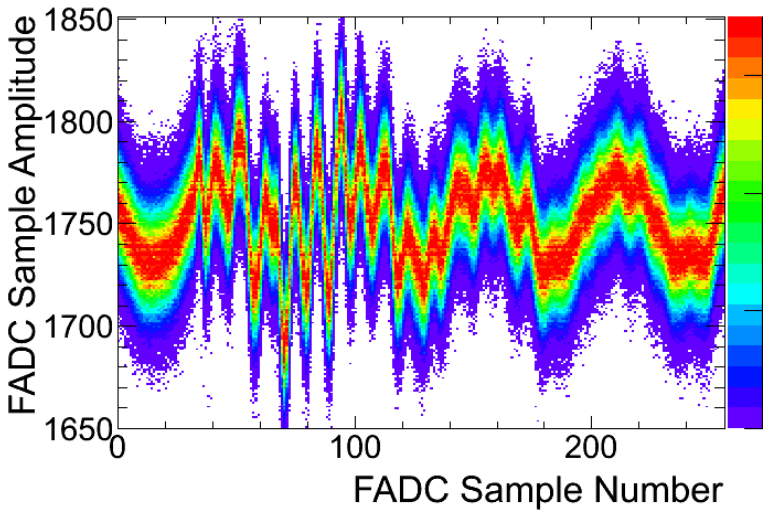

**Target V2**

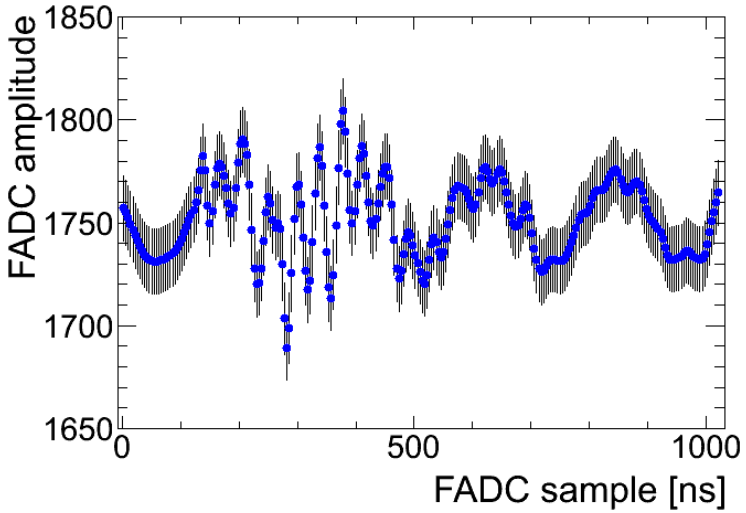


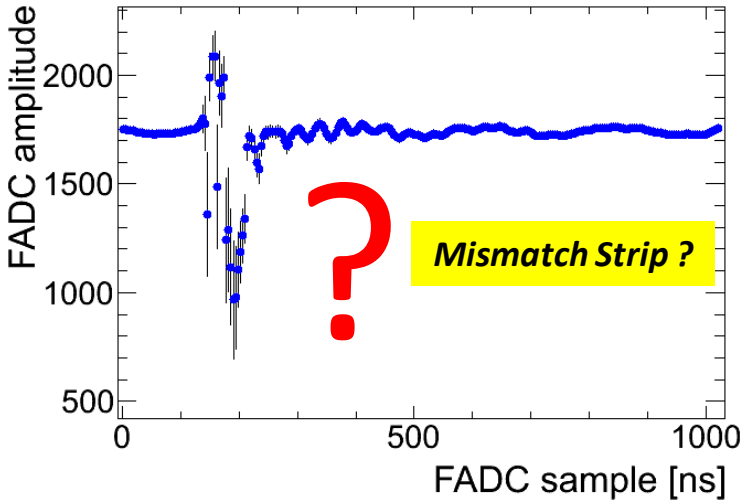
# AGS: Chan. 0 (Ham, Slow, Outer) Intensity 1.7

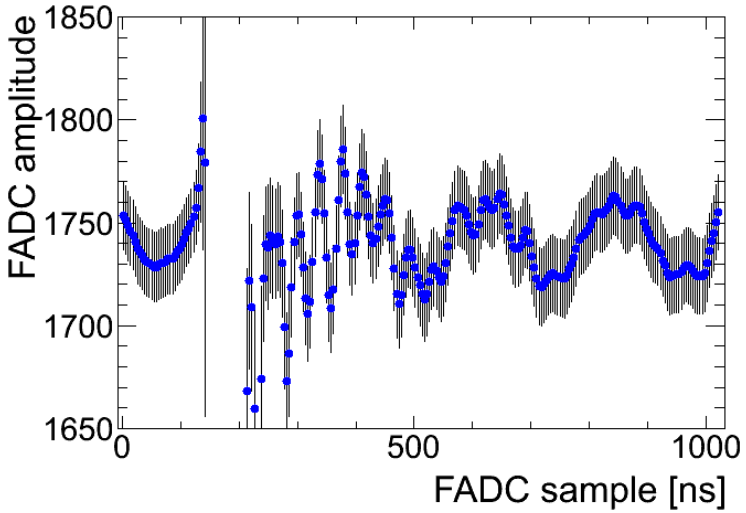
**No Target**



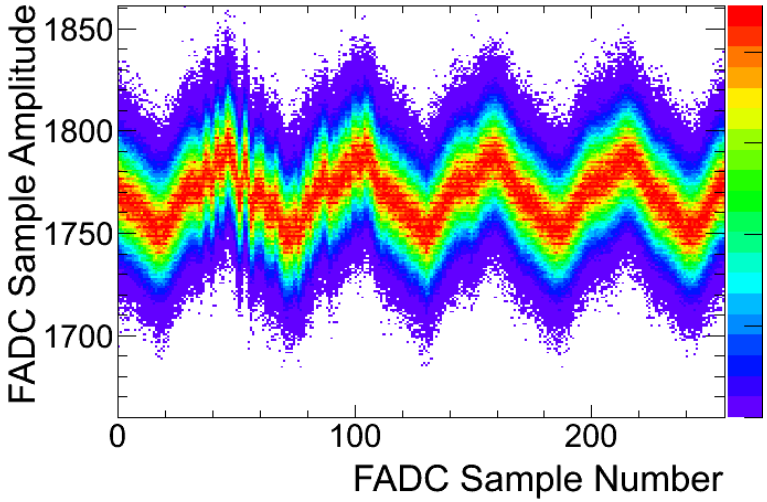

**Target V2**

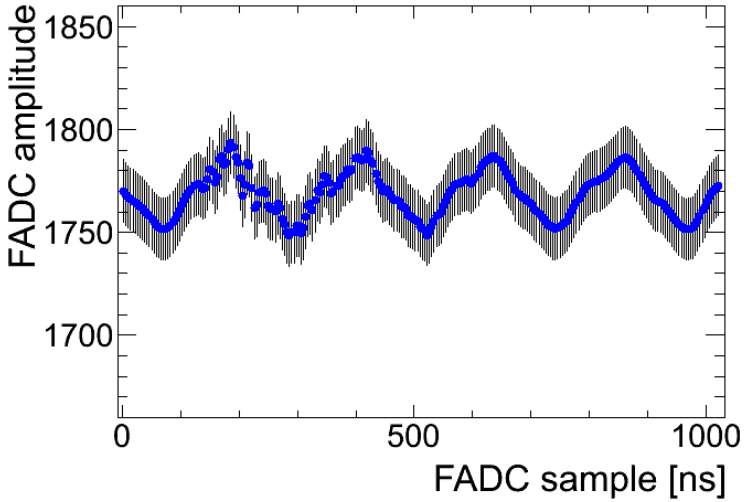


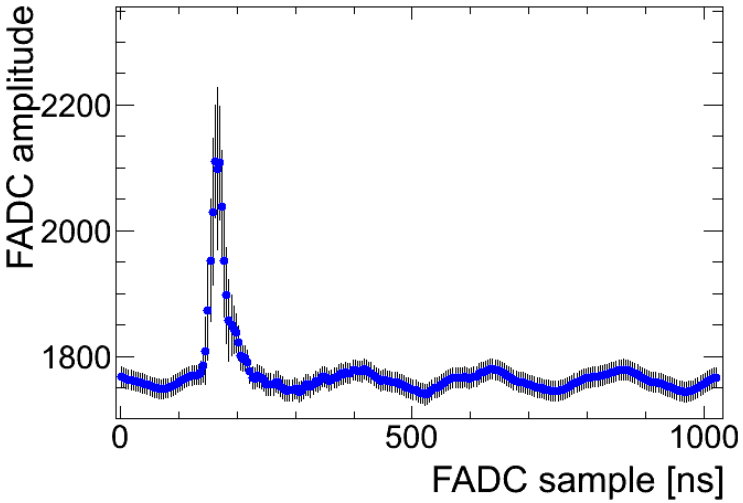
# AGS: Chan. 84 (Ham, Slow, Inner)  Intensity 0.35

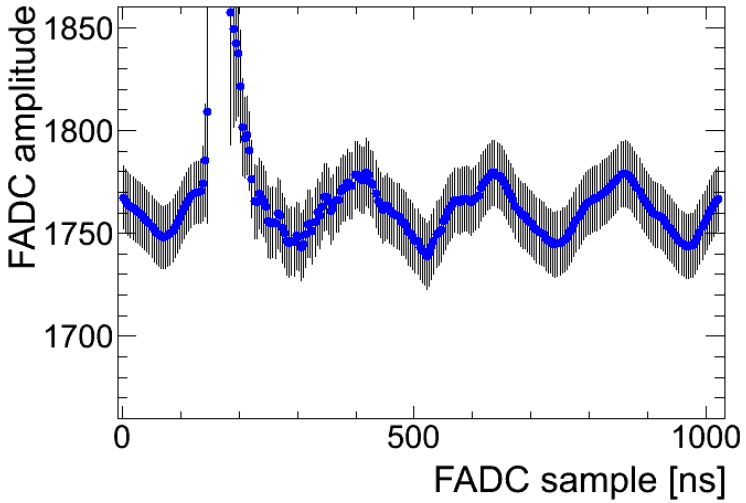
**No Target**



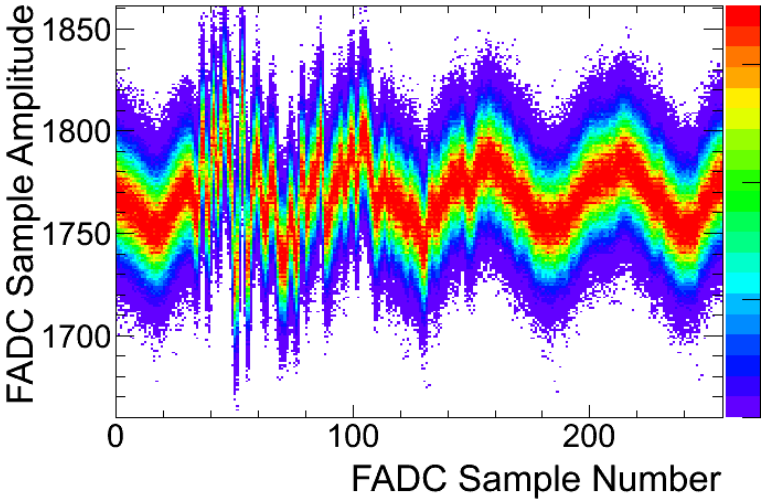

**Target V2**

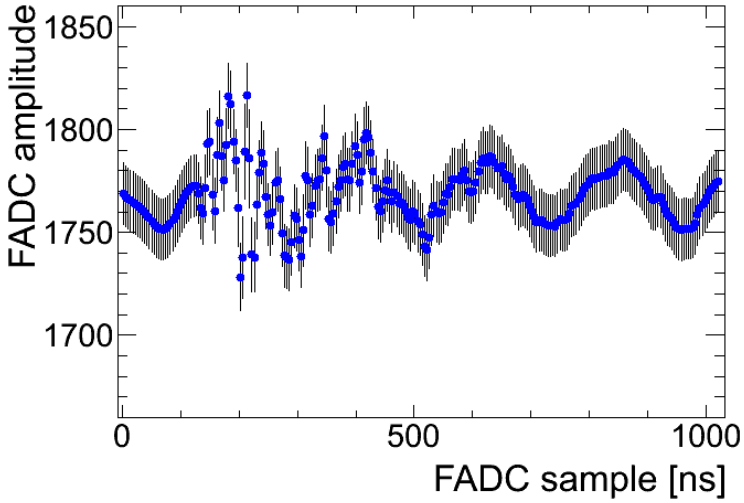


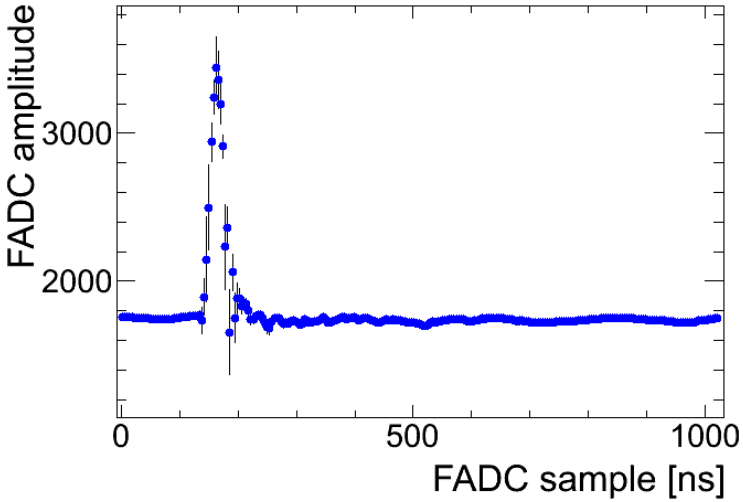
# AGS: Chan. 84 (Ham, Slow, Outer) Intensity 1.7

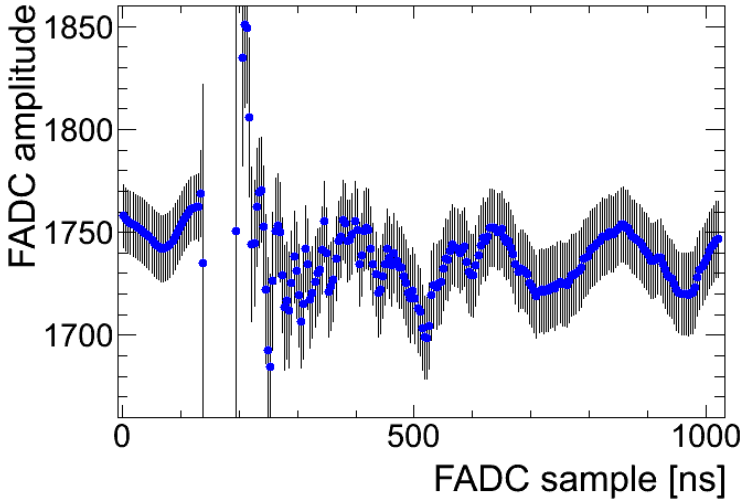
**No Target**



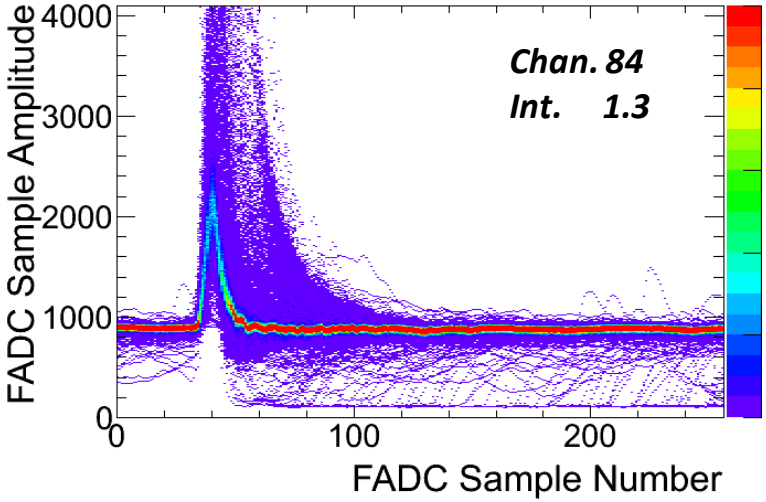

**Target V2**

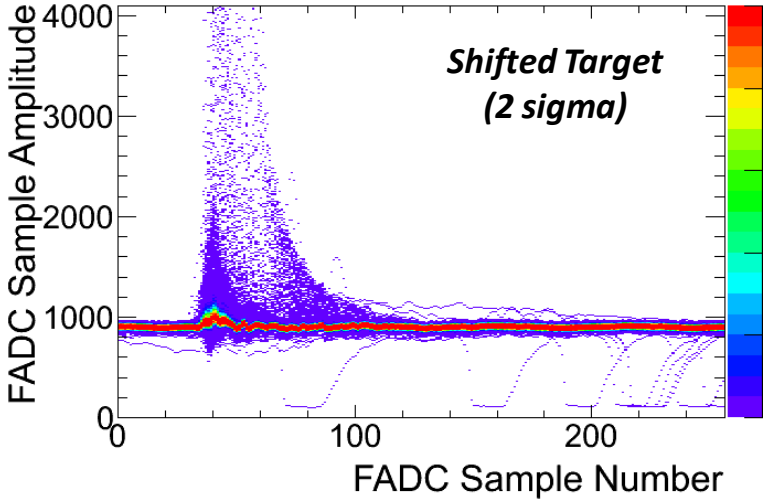


# ***Preliminary Summary for AGS Polarimeter***

- Clear picture of “induced pulses” / noises was obtained
- 4.5 MHz oscillation signal does not depend on beam intensity. Amplitude is at level of sensitivity of our WFDs.
- Induced pulse is actually a long lasting (~200-250 ns) beam intensity dependent oscillation signal. The main source of “corrupted” banana at AGS.
- A big scattered protons signal appears when target is entered to beam.
- Data analysis is not completed yet.



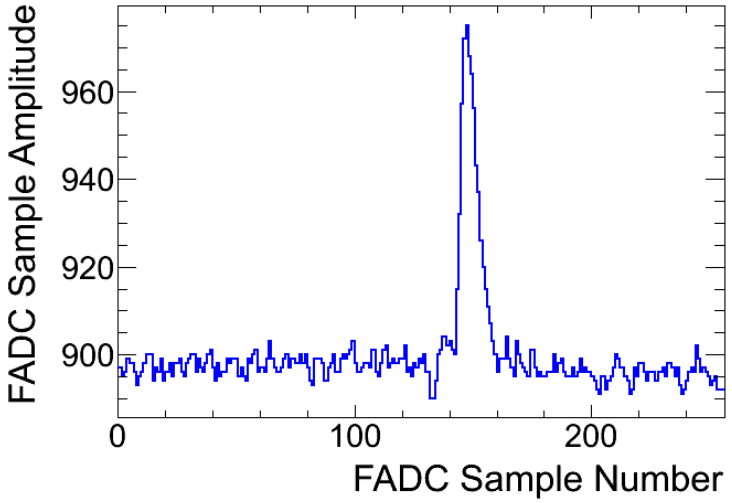



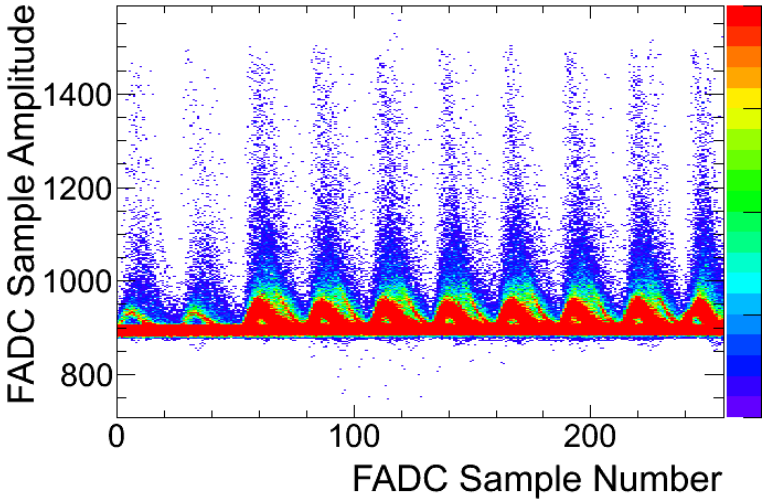
# H-Jet

***Trigger:*** ***BunchZero coincidence with Signal 1 or 2***
***(not synchronized with clocks)***

***Inputs:*** ***0. BunchZero***
***1. Signal 1 (not amplified in shaper)***
***2. Signal 2 (not amplified in shaper)***

***Data:*** ***256 samples for every input***




***To be analyzed***

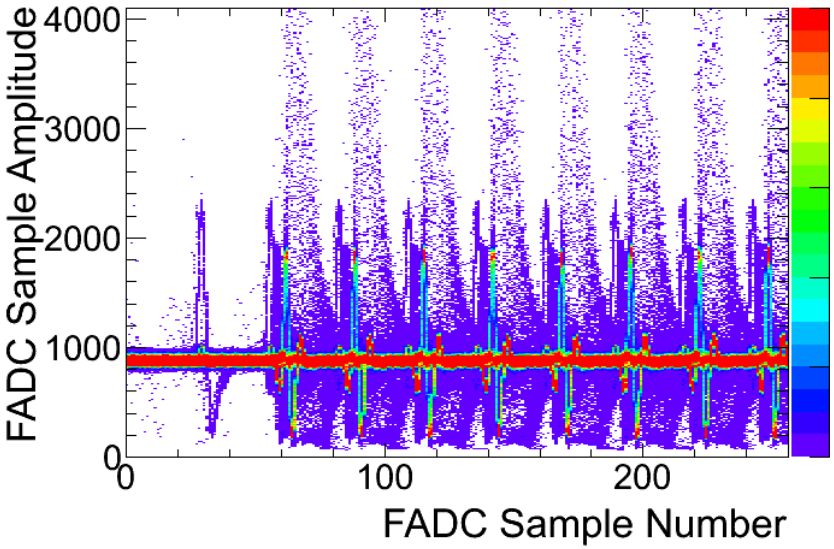
# RHIC p-Carbon

***Yellow ? Polarimeter (measurements in background)***

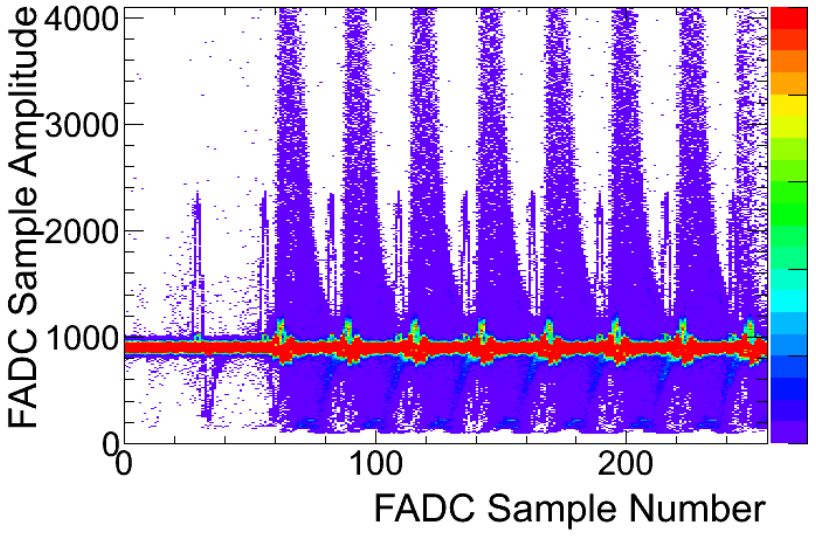
***Trigger: one of 2 strip signals above threshold***

***Input: one channel from every detector***

***Detector 1***




***Detector 3 (trigger)***




***To be analyzed***

# ***Summary***

- A FADC250 board was tested with VME(software) and external triggers
- Not all features were studied.
- Low internal noise, σ≈1.4 cnts. (smaller then white noise in polarimeter σ ~ 5-10 cnts ). Internal noise is independent on VME bus activity.
- Readout rate was about 15 Mbyte/sec during test measurements. We need > 80 Mbyte/sec for nonstop measurements of the polarizaton at RHIC pCarbon.
- Real data from AGS and RHIC pCarbons and H-Jet were recorded.
- Data analysis is in progress.
- This data may (must) be used for the developing of firmware algorithms.
- ***Preliminary:*** FADC250 may be used in AGS/RHIC polarimeters upgrades